

### **REMARKS/ARGUMENTS**

Reconsideration and withdrawal of the rejections set forth in the Non-Final Office Action dated March 4, 2009 are respectfully requested in view of the arguments and amendments presented herein.

This amendment is timely filed.

#### **Status of the Claims**

In the present response, claims 19, 37, 41, 49, and 53-56 are amended, claim 22 is cancelled, and no claims are added. Claims 1-18, 20, 24, 26, 28-34, 36, 38-40, 42, 44-48, and 50-52 were previously cancelled. Therefore, claims 19, 21, 23, 25, 27, 35, 37, 41, 43, 49, and 53-56 are pending in the application with claim 19 being the sole independent claim.

#### **Explanation and Support of Amendment**

By this amendment, Applicants amend independent claim 1 to recite a standard microtiter plate comprising a plurality of reaction vessels, wherein each of the plurality of the reaction vessels contains a same reaction mixture.

Applicants submit that each of the foregoing amendments is fully supported by the specification. For the convenience of the Office, specific examples of support are noted below:

Support for the amendment to claim 19 is found in the originally filed application at, e.g., page 2, lines 4-6; page 2, lines 27-30; page 4, lines 23-25; page 5, lines 13-15; and page 12, lines 7-9.

Accordingly, no new matter has been added by the amendments.

#### **Drawings**

The Office objects to the drawings. The Office asserts that "the gaps between the segments, must be clearly shown and referenced, or the feature(s) canceled from the claim(s)." Office Action at 2.

In response, Applicants respectfully submit that "gaps" are clearly shown in the Figures. Note that page 7, lines 23-25, of the originally filed application states, "By providing the distance  $d$  between adjacent segments, an air gap which thermally decouples the segments 8 and segment elements 10 respectively is formed." Also, note that distance " $d$ " is shown in Fig. 1. Applicants therefore submit that "gaps" are clearly shown in at least Fig. 1.

In view of the above, Applicants respectfully request withdrawal of this ground of objection.

### **Claim Objections**

Claims 21 and 22 are objected to because they are substantial duplicates of one another. In response, claim 22 has been cancelled without prejudice or disclaimer thereof. Applicants therefore respectfully request withdrawal of this ground of objection.

### **Response to § 112 Rejection**

Claims 19, 21-23, 25, 27, 35, 37, 41, 43, 49, and 53-56 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the reasons set forth at pages 4-5 of the Office Action. Although Applicants generally disagree with the rejection, in order to advance prosecution, claims 19, 37, 41, and 56 have each been amended to even more clearly recite the present invention. In this regard, any amendments to the claims which have not been specifically noted as being made to overcome a rejection based upon the prior art, should be considered to have been intended to clarify the claims and not narrow the claims, such that no estoppel should be deemed to attach thereto.

With regard to the claim 19 phrase "actuating the system, wherein the devices are actuated independently of one another to set and maintain different temperatures in two adjacent segments," the Office asserts that it is unclear whether or not this means that the heating and cooling devices must be connected to the control unit which, in turn, must be connected to temperature sensors, for providing feedback. The Office also asserts that it is also unclear whether or not any setting means allowing a user to

set desired temperatures(s) are intended. In response, claim 19 is clearly not so limited.

As to the claim 19 phrase "different temperatures to the segments during a temperature cycle to optimize the parameters for PCR," the Office asserts that it is not clear how "different temperatures" are related to the parameters to be optimized. In response, the Office is referred to page 5, lines 4-11, of the originally filed application. Concerning this phrase, the Office also asserts that it is unclear if any means for measuring a result variable needed as a criterion to evaluate whether or not the parameters for PCR were optimized, are intended. In response, claim 19 is clearly not so limited.

In view of the above, Applicants respectfully request withdrawal of this ground of rejection.

### **Response to § 103 Rejection**

Claims 19, 21-23, 25, 27, 35, 37, 41, 43, 49, and 53-56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gordon et al. (US 5,601,141) in view of Potter et al. (US 5,819,842).

The Office asserts, "Gordon discloses a modular thermal cyclor that carries samples through one or more predetermined temperature profiles and comprises a base with an array of modules ['segments'] mounted on the base." Office Action at 5-6 (brackets in original). The Office concedes that Gordon does not explicitly describe an embodiment with segments of the microtiter plate receiving element being sized to receive a single standard microtiter plate for independently controlling corresponding portions of the microtiter plate. *Id.* at 6.

The Office, however, asserts that Potter et al. discloses a device for independent temperature control of multiple samples disposed in different portions of a single microtiter plate. *Id.* at 7. The Office then argues that it would have been within the ordinary skill of an artisan to have modified the apparatus of Gordon such as to configure the independently controlled modules / sections for individual heating / cooling of separate portions of a single standard microtiter plate. *Id.*

In response, Applicants respectfully submit that there would have been insufficient reason for a skilled artisan to have combined the teachings of Gordon et al. and Potter et al. in the manner envisioned by the Office. For instance, Gordon et al. teaches away from a reaction vessel receiving element physically divided into two or more segments that are thermally insulated from one another in combination with a standard microtiter plate spanning an entirety of the reaction vessel receiving element. Gordon et al. states that prior devices “operate on only one plate” and the problem of expanding those devices to handle multiple plates. See Gordon et al. at, e.g., col. 1, lines 39-41. Thus, the purpose of Gordon et al. is to “provide a cyclor . . . which can be adapted to process a variety of sample holders,” each with their own microtiter plate. See id. at col. 2, lines 1-3. To provide a single standard microtiter plate spanning an entirety of the plural modules of Gordon et al. is expressly against the disclosure thereof. Thus, Gordon et al. teaches away from the combination envisioned by the Office.

In response to a similar argument, the Office asserts that Gordon et al. teaches that “cycling the samples in groups, independently of one another, can be organized both ‘as a single module or zone or as groups of modules or zones . . . .’” Office Action at 10. In response, Applicants respectfully submit this disclosure of Gordon et al. is fully consistent with Gordon et al. teaching separate microtiter plates for each module. If the Office disagrees, further clarification is requested.

Potter et al. also teaches away from a reaction vessel receiving element physically divided into two or more segments that are thermally insulated from one another in combination with a standard microtiter plate spanning an entirety of the reaction vessel receiving element. Potter et al. teaches that the thermal mass of the temperature controlled components should be kept to a minimum. See, e.g., Potter et al. at Abstract. In this regard, Potter et al. further teaches that “samples 11 are contained in wells 13 of low thermal mass, and these are connected by plastic webbing 14 of low thermal conductivity.” Potter et al. at col. 3, lines 61-63. As such, Potter et al. teaches away from a reaction vessel receiving element physically divided into two or more segments that are thermally insulated from one another in combination with a

standard microtiter plate spanning an entirety of the reaction vessel receiving element. Thus, Potter et al. teaches away from the combination envisioned by the Office.

Even if the teachings of the cited documents were combined, the present invention would not result. For example, the combined teachings of the cited documents fail to disclose a standard microtiter plate comprising a plurality of reaction vessels, wherein each of the plurality of the reaction vessels contains a same reaction mixture. Instead, a skilled artisan would understand that the cited documents are directed to simultaneously reacting different reaction mixtures. Potter et al. teaches the processing of multiple samples. Potter et al. at Abstract and col. 7, lines 5-6. Similarly, Gordon et al. teaches the processing of large numbers of biological or chemical samples. Gordon et al. at Abstract and col. 7, lines 7-13. Thus, the combined teachings of the cited documents fail to disclose a standard microtiter plate comprising a plurality of reaction vessels, wherein each of the plurality of the reaction vessels contains a same reaction mixture.

The combined teachings also fail to disclose two or more physically distinct devices for heating and cooling the reaction vessel receiving element, wherein each device for heating and cooling is aligned with and dedicated to heat and cool only one segment such that each segment is aligned with a device for heating and cooling. To the contrary, Potter et al., while disclosing heating and cooling elements, fails to disclose two or more physically distinct devices for heating and cooling the reaction vessel receiving element, wherein each device for heating and cooling is aligned with and dedicated to heat and cool only one segment such that each segment is aligned with a device for heating and cooling. Instead, the heater element 22 of Potter et al. is embedded in a matrix 24 which is in turn seated on a cooling arrangement 25/26/27, which cooling arrangement clearly spans the entire unit and thus all heater elements 22 in FIG. 2 thereof. Therefore, Potter et al. fails to teach two or more physically distinct devices for heating and cooling the reaction vessel receiving element, wherein each device for heating and cooling is aligned with and dedicated to heat and cool only one segment such that each segment is aligned with a device for heating and cooling.

Gordon et al. also fail to teach or suggest two or more physically distinct devices for heating and cooling the reaction vessel receiving element, wherein each device for

heating and cooling is aligned with and dedicated to heat and cool only one segment such that each segment is aligned with a device for heating and cooling. Instead, a cooling member 18 spans an entire row of modules 14 and is, therefore, neither aligned with nor dedicated to only one module.

Therefore, the cooling device of Potter et al. is essentially the same as that of Gordon et al. and fails to modify Gordon et al. in a manner which would render the claimed invention obvious. Thus, the combined teachings also fail to disclose two or more physically distinct devices for heating and cooling the reaction vessel receiving element, wherein each device for heating and cooling is aligned with and dedicated to heat and cool only one segment such that each segment is aligned with a device for heating and cooling.

In view of the above, Applicants respectfully request withdrawal of this ground of rejection.

#### **Response to Double Patenting Rejection**

Claims 19, 21-23, 25, 27, 35, 37, 41, 43, 49, and 53-56 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 of co-pending Application No. 11/470,463, claims 1-2 of co-pending Application No. 11/850,345, claim 18 of co-pending Application No. 11/450,442, claim 18 of co-pending Application No. 11/651,986, and claim 26 of co-pending Application No. 11/651,985.

Responsive to the Examiner's indication, Applicants request that this rejection be held in abeyance until patentable claims are identified in the applications.

#### **CONCLUSION**

In view of the foregoing, Applicants submit that all outstanding issues in this case have been resolved, and that all pending claims in their current form are allowable. A Notice of Allowance is therefore respectfully requested. Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 50-3994.

If a telephone conference would expedite the prosecution of the subject application, the Examiner is requested to call the undersigned at (650) 554-3414.

Respectfully submitted,

Date: \_\_\_\_\_

6/4/09



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